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Navy Marine Corps Spectrum Conference

JTIDS/MIDS Spectrum Support

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March 9, 2011

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Report Documentation Page

Form Approved
OMB No. 0704-0188

1. REPORT DATE	2. REPORT TYPE	3. DATES COVERED
09 MAR 2011		**00-00-2011 to 00-00-2011**

4. TITLE AND SUBTITLE	5a. CONTRACT NUMBER
JTIDS/MIDS Spectrum Support	5b. GRANT NUMBER
	5c. PROGRAM ELEMENT NUMBER
6. AUTHOR(S)	5d. PROJECT NUMBER
	5e. TASK NUMBER
	5f. WORK UNIT NUMBER
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) **Naval Marine Corps Spectrum Center (NMSC),Norfolk,VA,23511**	8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSOR/MONITOR'S ACRONYM(S)
	11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release; distribution unlimited

13. SUPPLEMENTARY NOTES
The 32nd Annual USN-USMC Spectrum Management Conference 7-11 March 2011, San Diego, CA

14. ABSTRACT

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT **unclassified**	b. ABSTRACT **unclassified**	c. THIS PAGE **unclassified**	**Same as Report (SAR)**	**18**	

Overview

- **Spectrum Certification Status**
- **Safety Cases (UK)**
- **Nellis Temp**
- **JTIDS Deconfliction**

Spectrum Certification

- **IRAC 33583/1, Link 16 Certification**
  - Effective March 25, 2004
  - Operational Limits Provided
    - 100/50 (300) Percent TSDF
      - 100% TSDF within 100nm radius
      - 400% TSDF within a 200 nm radius
    - Various Separation distances from ATC equipment
    - Contention transmissions allowed
    - JTIDS Voice permitted

Spectrum Certification Continued

- **Geographic Area Definitions**
  - 100% TSDF authorized for 100 nm radius around any TDMA terminal
  - 400% TSDF authorized for 200 nm radius around any TDMA terminal
    - Referred to as 100/50 (300)
  - 50% TSDF for closely spaced ground or stationary TDMA terminals
    - Includes slow moving airborne terminals
      - Airborne terminals still subject to collocation requirements
    - 3 nm radius around each TDMA terminal

Note: The current approved spectrum certification references an “any point in space” geographic management technique was to be implemented by Jan 2008, however this requirement was demonstrated by DoD to NTIA and FAA as not necessary and will be removed with the next update to the spectrum certification.

Spectrum Certification Continued

- **ATC Standoff Distance Criteria**
  - TACAN and DME
    - -33dBm for up to 50% TSDF limit
    - -24dBm for 20% TSDF or less
  - IFF, ATCRBS, and Mode-S receivers
    - -20 dBm for up to 50% TSDF limit
  - Received signal level limits are translated into nautical miles for every “approved” Link 16 platform in the CJCSI 6232.01 and the JTIDS/MIDS Spectrum Users Guide
    - Standoff distances also depend on the ATC antenna gains and connection insertion losses

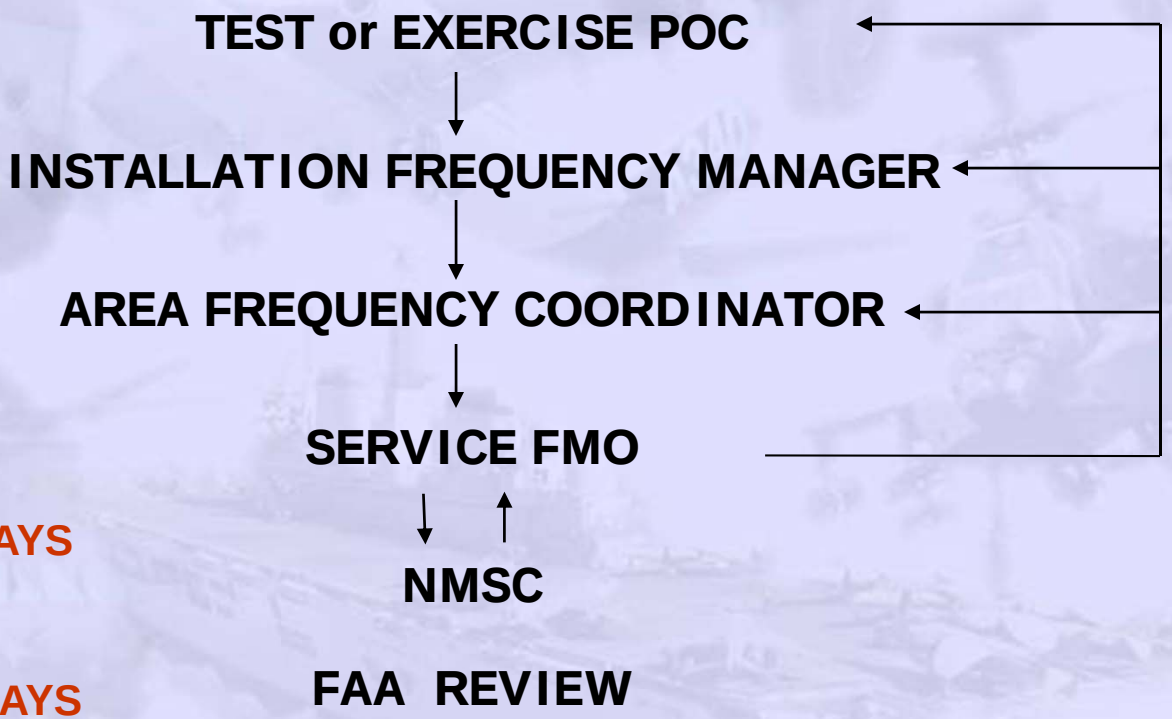
Spectrum Certification Continued

- **Contention Transmissions**
  - Contention Transmissions are permitted
    - Sum cannot exceed 25% TSDF
    - However, if, machine controlled contention other than RTT-B, PPLI and INE is used exclusively by fast moving aircraft then the contention TSDF limit is 33%.
  - Each Service Network Design Facility (NDF) works on developing documentation and tools to assist deconfliction authorities to determine contention TSDF contribution.
    - Service NDFs available to assist operators

Spectrum Certification Continued

- **Voice**
  - TSDF calculations will be in accordance with IRAC 33583
    - 12 platforms or less is counted as 1 voice pool
      - 12.55% (16kb) or 4.16% (2.4kb) TSDF contribution depending on the voice quality selected
    - 13 –20 Platforms
      - Double both
    - Greater Than 20 Platforms
      - Triple or 37.65% (16kb) or 12.48% (2.4kb)

FREQUENCY ASSIGNMENT PROCESS



SAMPLE FREQUENCY ASSIGNMENT REQUEST

- **Type of Assignment: Temporary**
- **Name of Assignment**: Link 16 Mission Enhancement
- **Location of Operation (Include Military Bases, Restricted Areas, Warning Areas, Military Operating Areas, if applicable):** Edwards AFB (200 nm around 345424N1175446W)
- **Inclusive Dates and Times of Operation:** 17–31 July 2010, 0800 – 1600 Local
- **Participants:** DD 1494 Air and Surface Components; F/A-18, F-35, GMG
- **Link 16 System Characteristics, JTIDS/MIDS:**
  - **1030 MHz Notch-Filter Insertion Loss (dB): _____**
  - **1030 MHz Notch-Filter Attenuation (dB): _____**
  - **Cable Insertion Loss (dB): _____**
  - **JTIDS/MIDS Antenna Gain (dBi): _____**
  - **TACAN Antenna Gain (dBi): _____**
  - **IFF Antenna Gain (dBi): _____**
  - **Distances between MIDS and IFF Antennas (inches): _____**

SAMPLE FREQUENCY ASSIGNMENT REQUEST (Continued)

- **PLATFORM TSDF:** ___22%__ **TOTAL EXERCISE TSDF:** _72%____
- **Network: (AF) ABCF0003**
- **JTIDS Voice: Yes/No:** 16 kbps **JTIDS Relay: Yes/No:** TSDF %
- **Data Only; Voice Only; Both Data and Voice**
- **Brief Description of Operation:** Test Training and Evaluation during Exercise "Name"
- **Purpose:** Link 16 operational evaluation of Service platform compatibility and interoperability in multi-function C2 roles
- **Requester:** Name, Organization, Phone Number (**NOT Just DSN)**, Email
- **U.S. Sponsor POC:** Name, Organization, Phone Number (**NOT Just DSN)**, Email
- **Stop Buzzer:** Name, Organization, Phone Number (**NOT Just DSN)**

Safety Cases (UK)

- UK Data Link Management Office (DLMO) on behalf of the CAA require safety cases for all visiting platforms
  - Safety cases are reviewed by a safety board made up of UK CAA and MOD representatives
  - No safety case on file means no transmit authority
  - DLMO has live transmission monitoring capability
    - US F-15s in Lakenheath were shut down
- There are currently 11 US platform safety cases held by the UK

Safety Cases (UK) (cont)

Platform Title	Terminal Type	Responsible Department	Effective until	Status
Annex A USAF FDL F-15 Platform	FDL	ESC/DIVJ	12/20/2010	
Annex D Rivet Joint Platform Interface	2/2H	55 OSS/OSKW	2/10/2011	
US MIDS LVT1 F16A/B/C/D Platforms	MIDS	ESC/N13P	3/1/2011	
KC-135 ROBE	FDL	100 OSS/OSK	2/13/2013	
US GUIDED MISSILE CRUISER CLASS (CG) SHIPS	Class 2/2H	US Navy Office	10/5/2012	
US GUIDED MISSILE DESTROYER CLASS (DDG) SHIPS	Class 2/2H	US Navy Office	10/5/2012	
BOSS	FDL		3/23/2011	
GMG RAIDER	LVT II	603 AOC	3/8/2011	
US E3 B, C AWACS	Class 2	USA MC Spectrum Centre	11/5/2011	
US FA-18 Super Hornet & Variants	MIDS	USMC	8/2/2012	
US E-8C JSTARS	URC-107	116 Air Ctrl Wg		

Key:

- Draft SC
- CAA Review
- Being processed (with SEIG)
- Approved for UK FCA
- On 6 Months Renewal Notice
- Removed/Out Of Service

Nellis Temp

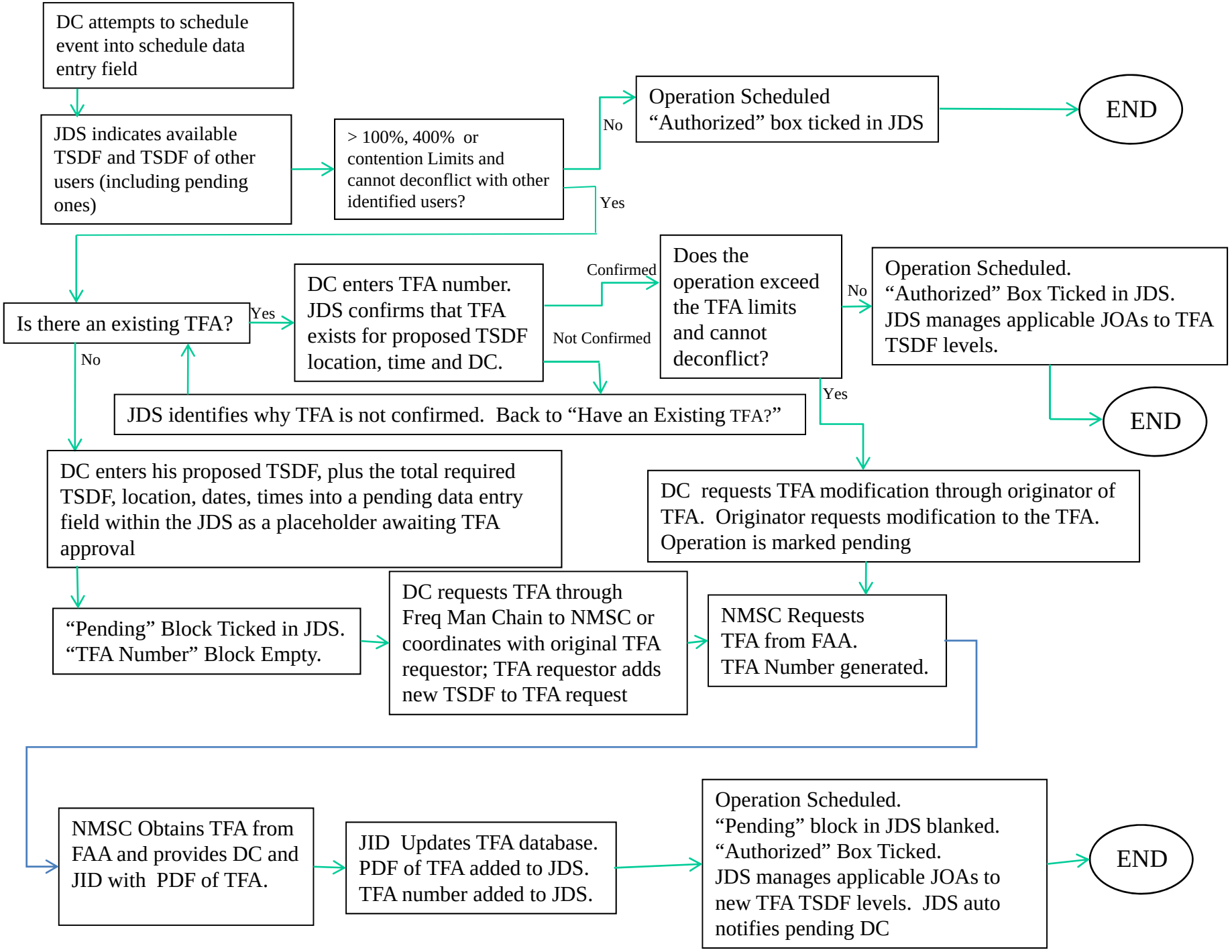
- **TSDF or Pulse Density around any terminal limited by IRAC 33583**
  - 100% TSDF in a 100 nm radius, 400% TSDF in a 200 nm radius
  - Waivers or temp assignments that exceed peacetime TSDF restrictions for exercises at test and training ranges are routine (up to 400% in 100 nm geo), but adjacent area deconfliction is then an issue
    - NTTR, China Lake, Edwards AFB, Fallon NAS, Fort Erwin and their restricted areas
    - Langley AFB, Norfolk, Oceana NAS, and VACAPES warning areas
    - Eglin AFB, Hurlburt Field, Tindal AFB, and Gulf warning areas
    - San Diego, Miramar, Camp Pendleton, and SOCAL warning areas

Nellis Temp (cont)

- **The Nellis Temp is intended to provide 200% TSDF to be allowed simultaneously in adjacent JOAS**
  - FAA allows temp increases in TSDF for a geo area to as much as 400%, but all surrounding areas are shut down
    - Allows areas like NTTR, China Lake, Edwards AFB, Fallon NAS, Fort Erwin to operate unencumbered as long as there is centralized scheduling to ensure no JOA exceeds 200%
      - Edwards and Nellis identified as central schedulers for the deconfliction server

JTIDS Deconfliction

- **Significant upgrades to the JTIDS Deconfliction Server (JDS) are underway**
  - Verification of data provided incorporated
    - TFA will be linked to scheduled activity
    - Accurate TSDF calculator to be added
    - Flexibility to have different geographic area limits for different locations or time
    - Add the 100 NM and 200 NM composite TSDF query
    - Performance of TSDF calculations during the scheduling process for all JOAs and not just the JOA for the requested operation
- **April 12-14 demonstration of the new capabilities is planned**
    - FAA will actively participate


DC attempts to schedule event into schedule data entry field
JDS indicates available TSDF and TSDF of other users (including pending ones)
> 100%, 400% or contention Limits and cannot deconflict with other identified users?
No
Operation Scheduled "Authorized" box ticked in JDS
END
Yes
Is there an existing TFA?
Yes
DC enters TFA number. JDS confirms that TFA exists for proposed TSDF location, time and DC.
Confirmed
Does the operation exceed the TFA limits and cannot deconflict?
No
Operation Scheduled. "Authorized" Box Ticked in JDS. JDS manages applicable JOAs to TFA TSDF levels.
END
Not Confirmed
JDS identifies why TFA is not confirmed. Back to "Have an Existing TFA?"
No
Yes
DC enters his proposed TSDF, plus the total required TSDF, location, dates, times into a pending data entry field within the JDS as a placeholder awaiting TFA approval
DC requests TFA modification through originator of TFA. Originator requests modification to the TFA. Operation is marked pending
"Pending" Block Ticked in JDS. "TFA Number" Block Empty.
DC requests TFA through Freq Man Chain to NMSC or coordinates with original TFA requestor; TFA requestor adds new TSDF to TFA request
NMSC Requests TFA from FAA. TFA Number generated.
NMSC Obtains TFA from FAA and provides DC and JID with PDF of TFA.
JID Updates TFA database. PDF of TFA added to JDS. TFA number added to JDS.
Operation Scheduled. "Pending" block in JDS blanked. "Authorized" Box Ticked. JDS manages applicable JOAs to new TFA TSDF levels. JDS auto notifies pending DC
END

Link 16 Spectrum Management Points of Contact

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Elvira Pearce, (703) 325-2822, email: elvira.pearce@navy.mil
Michael Horrocks, (703) 325-2793, email: michael.horrocks.ctr@navy.mil
Kurt Nahser, (703) 647-6036, email: kurtnahser@odysseyconsult.com

Air Force Spectrum Management Organization (AFSMO) ALEXANDRIA VA//CC//
Michael Wyatt, (703) 428-1537, email: Michael.Wyatt@pentagon.af.mil

Army Spectrum Management Office (ASMO) ALEXANDRIA VA//SAIF-AOS-O
MSG Melvin Ford, (703) 325-8203, email: melvin.r.ford@us.army.mil

Deconfliction Server, Fort McPherson GA**,** Steven Mosley, JNDL, JID, USJFCOM J-7, (404) 464 4081, email: robert.s.mosley@us.army.mil

QUESTIONS??